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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,989	02/09/2004	My N. Nguyen	JM35978 (CIP2) DIV - 4962	1282
7590 01/05/2006			EXAMINER	
Bingham McCutchen LLP Three Embarcadero Center San Francisco, CA 94111-4067			VIJAYAKUMAR, KALLAMBELLA M	
			ART UNIT	PAPER NUMBER
			1751	

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,989

Applicant(s)

NGUYEN, MY N.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41,42 and 44-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41-42, 44-46, 48-64 is/are rejected.
- 7) ☒ Claim(s) 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

- Claims 41, 45-49, 51 and 58 were amended. Claim 43 was cancelled. Claims 41-42 and 44-64 as amended are currently pending with the application.
- The Declaration under 37 CFR 1.132 filed 10/07/2005 is sufficient to overcome the rejection of claims based upon Nguyen (US 5,852,092).
- Applicant's amendment overcomes the rejection of claims under 35 USC 112-II paragraph cited in the office action mailed 07/05/2005.
- Applicant's arguments filed 10/07/2005 have been fully considered but they are not fully persuasive. Applicants argue that the prior arts by Kuist (US-102), Cole (US-093), Reylek (US-915) and Vyas (US-686) do not teach an interface material containing at least one wetting enhancer (Page-6, Lines 1-5; 12-16).

Applicants are correct in this regard with respect to these prior arts and the rejection of claims under 35 USC 102(b) cited in office action mailed 11/03/2004 and 07/05/2005 over these prior arts are withdrawn.

- Applicants further argue that the wetting enhancers of the instant invention are not the same as silicone-based surfactants of Morgan et al (US-479) that is correct. The wetting enhancers in the instant claim are not limited to the specific surfactants/wetting-enhancers as argued (Page-10, Lines 3-6), and the *examiner maintains the following rejection per office action mailed 07/05/2005: (1). rejection of claims 41-42 and 56-64 under 35 U.S.C. 102(b) as being anticipated by Morgan (US 4,931,479) that is repeated below.*

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Claim Rejections - 35 USC § 102

- The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
- 1. Claims 41-42, 56-60 and 63-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Morgan (US 4,931,479).

Morgan teaches a form-in-place conductive polyurethane foam <interface material> that is light weight, flexible and withstands vibration containing a dispersion of conductive fillers of Ag, Cu and Al <solder> in an elastomer <compliant resin> and further containing a surfactant <wetting enhancer> that meets the limitations of instant Claim-41 (Abstract, Col-2, Ln 39-42; Col-6, 23-38).

With regard to claims 42 and 60 the prior art teaches the amount of the conductive filler to be 40 pbw to 150 pbw per 100 parts of polyol resin (Col-6, Ln 56-64).

With regard to claim 56, the prior art teaches an Al conductive filler.

With regard to claims 57-58, the prior art teaches addition of the carbon fiber with a particle size of 1-70 microns (Col-7, Ln 1-3, Col-6, Ln 50-55).

With regard to claims 63-64, the prior art teaches a 30-mil thick sheet of the conductive material (Col-9, Ln 47-51). All the limitations of the instant claims are met.

The reference is anticipatory.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 41-42, 44-46, 48-54, 56-57 and 59-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Reylek (US 5,890,915) in view of Kawamura et al (US 5,684,110).

Reylek teaches a conducting structure/sheet strips with resilient conductive paths containing a vinyl siloxane elastomer sheet matrix coated with mixture containing <interface material> (Col-10, Ln-63 to Col-11, Ln- 15):

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- (i) Vinyl siloxane binder (GE-RTV#645) (Compliant resin/vinyl silicone)<claims: 41, 44, 45, 46, 59>
- (ii). Hydride cross-linker at 7 wt% content<claims 45, 48,>
- (iii). Pt catalyst at 1 PPM level <claims 45 and 49>
- (iv). Conductive filler such as Cu, Ag, In, Sn, Ga and their alloys in the amount of 85% by weight of total solids and binder combined <claims 41-42, 52-54, 56, 60-62>.
- (v). Fillers such as alumina and silica (Col-7, Ln 17-30) <claim 57>

The prior art fails to teach the addition of a wetting enhancer per claim-41, an organotitanate per claim 51, and a specific Pt complex catalyst per claim 50.

In the analogous art, Kawamura et al teach the benefits of adding organotitanate esters for coupling siloxanes and platinum vinylsiloxane complex catalysts for forming gaskets in place at low temperatures <interface material> by the hydrosilylation of polyorganosiloxanes that are similar in composition to those claimed/disclosed by the applicants and have the same utility.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Reylek with Kawamura to modify the siloxane compositions by including organotitanates condensation-catalyst to benefit from accelerated reaction between the components and further include a platinum complex catalyst as functional equivalent of Pt catalyst with reasonable expectation of success, because the combined prior art teaching is suggestive of the claimed interface material. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972) (discussed below); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991) (discussed below).

The strips of the product (Col-11, Ln 45-47) further meet the limitations of product claims 63-64.

2. Claims 41-42, 44-46, 48-54, 56-57 and 59-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Reylek (US 5,890,915) in view of Kawamura et al (US 5,684,110) and Korleski (US 5,879,794).

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The combined teachings of Reylek in view of Kawamura et al as set forth in Rejection-1 under 35 USC 103(a) is herein incorporated.

The combined teachings of Reylek in view of Kawamura et al is silent about the wetting action/ coupling agent functionality of the organotitanates.

In the analogous art, Korleski teaches adhesives containing polymers filled with nickel or **solder**, sililating agents, **organotitanate coupling agents** and polysiloxane resins (Col-7, Ln 39-54, Col-7, Ln 64 to Col-8, Ln 45).

The coupling agent/wetting action functionality by the organotitanates in the combined composition of Reylek and Kawamura would be obvious over the teachings of Korleski that clearly teaches coupling action by organotitanates (Col-7, Line- 39 to Col-8, Line-28).

3. Claims 41-42, 44-46, 48-51 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vyas (US 5,348,686) in view of Kawamura et al (US 5,684,110).

Vyas teaches an electro-conductive silicone gel <compliant resin> comprising silver particles <solder> that is non-flowing, self-healing and thermally stable (Abstract, Col-2, Ln 50-55). The prior art further teaches using the catalyst 157Z (dichlorodicarbonyl Pt) with 157A and 157B (Col-4).

The prior art fails to teach the addition of a wetting enhancer per claim-41, an organotitanate per claim 51, and Pt complex catalyst per claims 50.

In the analogous art, Kawamura et al teach the benefits of adding organotitanate esters for coupling siloxanes and platinum vinylsiloxane complex catalysts for forming gaskets in place at low temperatures <interface material> by the hydrosilylation of polyorganosiloxanes that are similar in composition to those claimed/disclosed by the applicants and have the same utility.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Vyas with Kawamura to modify the siloxane compositions by including organotitanates condensation-catalyst to benefit from accelerated reaction between the components and further include a platinum complex catalyst as functional equivalent of Pt catalyst with reasonable expectation of success, because the combined prior art teaching is suggestive of the claimed interface material. The wetting action by the

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organotitanates would be obvious because similar compositions are expected to possess similar properties. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972) (discussed below); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991) (discussed below).

With regard to claims 42 and 60-61, the prior art teaches 60-75 wt% conductive filler in the composition (Col-3, Ln 43-48).

With regard to claims 44-46, the prior art teaches the addition of vinyl terminated poly-dimethyl siloxane (157A); with regard to claims 45 and 48, the prior art teaches a hydride functional cross-linker (157B); and with regard to claims 45 and 49, the prior art teaches a Pt complex as catalyst (Col-2, Table; Col-4, chemical formula).

4. Claims 41-42, 44-46, 48-51 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vyas (US 5,348,686) in view of Kawamura et al (US 5,684,110) and Korleski (US 5,879,794).

The combined teachings of Vyas in view of Kawamura et al as set forth in Rejection-3 under 35 USC 103(a) is herein incorporated.

The combined teachings of Vyas in view of Kawamura et al is silent about the wetting action/coupling agent functionality of the organotitanates.

In the analogous art, Korleski teaches adhesives containing polymers filled with nickel or **solder**, sililating agents, **organotitanate coupling agents** and polysiloxane resins (Col-7, Ln 39-54, Col-7, Ln 64 to Col-8, Ln 45).

The coupling agent/wetting action functionality by the organotitanates in the combined composition of Vyas and Kawamura would be obvious over the teachings of Korleski that clearly teaches coupling action by organotitanates (Col-7, Line- 39 to Col-8, Line-28).

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5. Claims 52-54, 56-57 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vyas (US 5,348,686) in view of Kawamura et al (US 5,684,110) and Reylek (US 5,890,915).

The disclosure by Vyas in view of Kawamura teaching an electro-conductive silicone gel as set forth in rejection-3 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of other solder materials per claims 52-54, 56; fillers per claim 57 and the composition ranges per claim 62.

In the analogous art Reylek teaches interface materials comprising conductive fillers such as Cu, Ag, In, Sn, Ga and their alloys in the amount of 85% and the addition of rheological/thermal-conductive fillers such as alumina and silica in a matrix of silicone elastomer (Rejection-1 under 35 USC 103(a)).

It would be obvious to a person of ordinary skill in the art to combine the prior art teachings to include/substitute the solders of Reylek et al as functional equivalents of solder in the composition and optimize its composition to achieve desired characteristics per the teachings of Reylek and/or include fillers such as silica/alumina to benefit from thermal conductivity/rheology with reasonable expectation of success.

6. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reylek (US 5,890,915) in view of Kawamura et al (US 5,684,110) and Bosch (DE 19640192, Abstract).

The disclosure on the conducting structure/sheet with resilient conductive paths by Reylek in view of Kawamura et al (US 5,684,110) as set forth in rejection-1 under 35 USC 103(a) is herein incorporated.

The prior arts fail to teach the addition of SnBi or SnAgAu per claim-55.

In the analogous art, Bosch teaches an anisotropic adhesive comprising an alloy of Sn/Bi in a resin base and an adhesive film and its benefits in assembling IC circuits in a flip-chip manner without bumping.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Reylek, Kawamura and Bosch by modifying the siloxane compositions by incorporating Sn/Bi in the composition as functional equivalents of solder to benefit from low temperature processing with reasonable

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expectation of success, because the combined prior art teaching is suggestive of the claimed interface material.

7. Claim 55 rejected under 35 U.S.C. 103(a) as being unpatentable over Vyas (US 5,348,686) in view of Kawamura et al (US 5,684,110) and Bosch (DE 19640192, Abstract).

The disclosure on the electro-conductive silicone gel by Vyas in view of Kawamura as set forth in rejection-3 under 35 USC 103(a) is herein incorporated.

The prior arts fail to teach the addition of SnBi or SnAgAu per claim-55.

In the analogous art, Bosch teaches an anisotropic adhesive comprising an alloy of Sn/Bi in a resin base and an adhesive film and its benefits in assembling IC circuits in a flip-chip manner without bumping.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Vyas, Kawamura and Bosch by modifying the siloxane compositions by incorporating Sn/Bi in the composition as functional equivalent of solder to benefit from low temperature processing with reasonable expectation of success, because the combined prior art teaching is suggestive of the claimed interface material.

8. Claim 58 rejected under 35 U.S.C. 103(a) as being unpatentable over Reylek (US 5,890,915) in view of Kawamura et al (US 5,684,110) and Morgan (US 4,931,47).

The disclosure on the conducting structure/sheet with resilient conductive paths by Reylek in view of Kawamura et al as set forth in rejection-1 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of carbon fibers per claim-58.

In the analogous art, Morgan teaches an flexible form-in-place conductive sheet and the compositions containing carbon fiber and its benefits with microwave absorption.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Reylek, Kawamura and Morgan by modifying the siloxane compositions by incorporating carbon fibers in the composition to benefit from microwave noise cancellation with reasonable expectation of success, because the combined prior art teaching is suggestive of the claimed interface material.

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9. Claim 58 rejected under 35 U.S.C. 103(a) as being unpatentable over Vyas (US 5,348,686) in view of Kawamura et al (US 5,684,110) and Morgan (US 4,931,47).

The disclosure on the electro-conductive silicone gel by Vyas in view of Kawamura as set forth in rejection-3 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of carbon fibers per claim-58.

In the analogous art, Morgan teaches an flexible form-in-place conductive sheet and the compositions containing carbon fiber and its benefits with microwave absorption.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Vyas and Kawamura with Morgan by modifying the siloxane compositions by incorporating carbon fibers in the composition to benefit from microwave noise cancellation with reasonable expectation of success, because the combined prior art teaching is suggestive of the claimed interface material.

Allowable Subject Matter

Claim 47 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor fairly suggestive of the use of Vinyl-Q-Resin in the composition of interface materials.

Response to Arguments

Applicants argue that Kawamura (US 110) teaches the addition of organotitanes as catalysts and not as wetting enhancer (Page-12) and the intent of addition does not prohibit the functionality of the material characteristics acting as a wetting enhancer/surfactant/coupling agent/catalyst.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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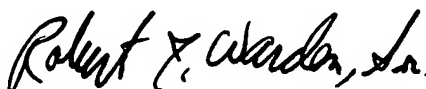
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8-5.30 Mon-Thu, 8-4.30 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
December 19, 2005.


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